Small Business Innovation Research (SBIR) and Small Business Technology TRansfer (STTR) Programs

Manny Oliver
Director, DOE SBIR/STTR Programs Office

NCET2 Webinar May 28, 2013



Purpose

Original Charter

- stimulate technological innovation:
- use small business to meet Federal R/R&D needs:
- foster and encourage participation by the socially and economically disadvantaged SBCs, and by SBCs that are 51 percent owned and controlled by women, in technological innovation; and
- increase private sector commercialization of innovations derived from Federal R/R&D, thereby increasing competition, productivity, and economic growth

Purpose today

- Program has evolved to have greater emphasis on commercialization
 - Requires evaluation of commercial potential in Phase I and Phase II applications
- Seed capital for early stage R&D with commercialization potential
 - Awards comparable in size to angel investments in the private sector
 - Accepting greater risk in support of agency missions

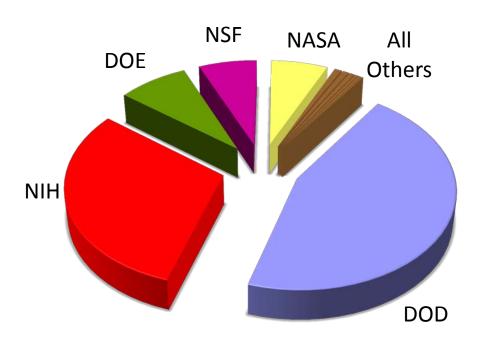


Program Administration & Funding

- Program Administrator: Small Business Administration (SBA)
 - Issues policy directives for SBIR and STTR
 - Issues annual reports to Congress
- SBIR (Small Business Innovation Research)
 - For FY 2014: 2.8% of agency extramural R&D budgets
 - First year: 1983
 - Applies to agencies with >\$100M in extramural R&D: DoD, NIH, NSF, DOE, NASA, DHS, USDA, DOC, DOT, EPA, DOEd
- STTR (Small Business Tech Transfer)
 - Requires collaboration with a non-profit research institution
 - For FY 2014: 0.40% of agency extramural R&D budgets
 - First year: 1994
 - Applies to agencies with >\$1B in extramural R&D: DOD, NIH, NSF, DOE, NASA



SBIR/STTR Budgets by Agency, 2013



~ \$2.3B in FY13 across all agencies

Agencies with SBIR and STTR Programs		
Department of Defense (DOD)	\$ 1.0 B	
Department of Health and Human Services: National Institutes of Health (NIH)	\$697.0 M	
Department of Energy (DOE) and Advanced Research Projects-Energy (ARPA-E)	\$183.9M	
National Science Foundation (NSF)	\$153.0 M	
National Aeronautics and Space Administration (NASA)	\$ 148.8 M	
Agencies with SBIR Programs		
U.S. Department of Agriculture (USDA)	\$18.4M	
Department of Homeland Security (DHS): Science and Technology Directorate (S&T) and Domestic Nuclear Detection Office (DNDO)	\$15.7 M	
Department of Education (ED)	\$13.4 M	
Department of Transportation (DOT)	\$7.6 M	
Department of Commerce: National Oceanic and Atmospheric Administration (NOAA) and National Institute of Standards and Technology (NIST)	\$7.4 M	
Environmental Protection Agency (EPA)	\$3.8 M	

Eligibility & Phased R&D Approach

- Small Business Eligibility
 - For-profit, at least 51% US-owned, small business with 500 or fewer employees located in the US
 - Principal Investigator (PI) primary employment must be with the small business for SBIR. For STTR, PI may come from the research institution.
- Phased R&D Approach
 - Phase I: Feasibility, 6-12 months, \$150k (guideline)
 - Phase II: Prototype Development, 2 years, \$1M (guideline)

- Phase III: Commercialization, funded by private sector or federal agencies

agency SBIR & STTR allocations can only be used for Phase I and II awards



Important Features of the SBIR/STTR Programs

- Cost sharing
 - NO cost sharing required
- Patent Rights
 - Small businesses may file for patent rights to inventions resulting from their R&D
 - Government retains government use rights
- Data protection
 - Data generated from your R&D is protected for a minimum of 4 years after the conclusion of your award
 - Government retains a royalty-free license for use of technical data

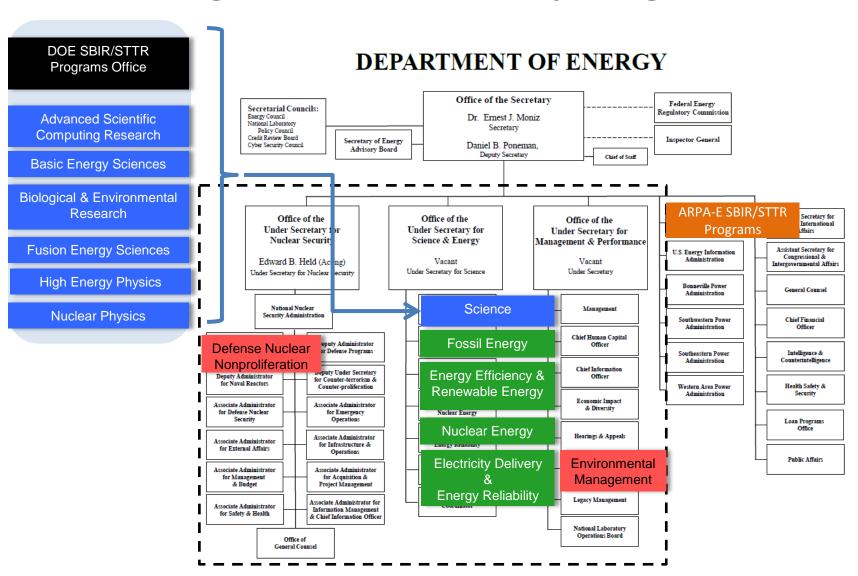
DOE SBIR & STTR Programs: **Technology Areas**

U. S. Department of Energy Mission

- The mission of the Department of Energy is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions.
 - Goal 1: Catalyze the timely, material, and efficient transformation of the nation's energy system and secure U.S. leadership in clean energy technologies.
 - Goal 2: Maintain a vibrant U.S. effort in science and engineering as a cornerstone of our economic prosperity, with clear leadership in strategic areas.
 - Goal 3: Enhance nuclear security through defense, nonproliferation, and environmental efforts.



DOE Program Offices Participating in SBIR/STTR





Operation of the DOE SBIR and STTR Programs

- DOE Program Office
 - Develop Topics
 - Identify Reviewers (Scientific Peer Review)
 - Recommend Awardees
 - Manage Projects

Technical Expertise Leveraged
Throughout DOE

- DOE Chicago Office
 - Negotiate Grants
 - Issue New andContinuation Awards
 - Grant Closeout

Single Grants Office for Awardees

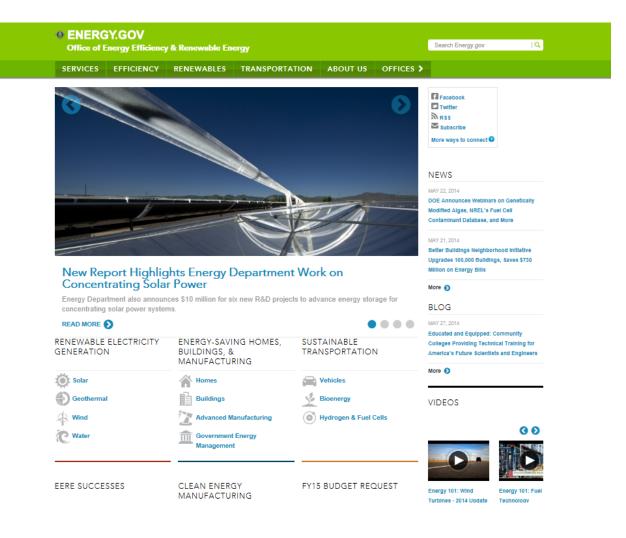
- DOE SBIR/STTR Programs Office
 - Develop Funding Opportunity Announcements
 - Administer Review and Selection Process
 - Ensure Compliance with SBIR/STTR Legislation
 - Conduct Outreach

Single Administrative Office for Applicants



Information Available at DOE Program Office Websites

- Mission
- Technical Reference Data and Reports
- Conference Proceedings
- Contact
 Information





DOE Program Offices supporting Goal 1: Clean Energy Technologies

- Office of Electricity Delivery and Energy Reliability
- Office of Energy Efficiency and Renewable Energy
- Office of Fossil Energy
- Office of Nuclear Energy



R&D Topic Areas

- Clean Coal Technologies
- Advanced Turbine Technology
- Oil and Gas Technologies
- Advanced Materials and Technologies for Nuclear Energy
- Smart Grid Technologies
- Bio-energy & Biofuels
- Hydrogen & Fuel Cells
- Solar Power
- Water Power
- Wind Energy
- Energy Storage



DOE Program Offices Supporting

Goal 2: Science and Engineering Leadership

- Advanced Scientific Computing Research
- Basic Energy Sciences
- <u>Biological and Environmental</u>
 <u>Research</u>
- Fusion Energy Sciences
- High Energy Physics
- Nuclear Physics



R&D Topic Areas

- Advanced Detectors
- Accelerator technology
- RF Components and Systems
- Data Acquisition, Processing and Analysis
- Fusion Energy Systems
- High Performance Computing & Networking
- Modeling and Simulation
- Atmospheric Measurement Technology
- Genomic Science and Related Biotechnologies
- Advanced Sources: neutron, x-ray, electron



DOE Program Offices Supporting

Goal 3: Nuclear Security

- Office of Defense Nuclear Nonproliferation
- Office of Environmental
 Management



R&D Topic Areas

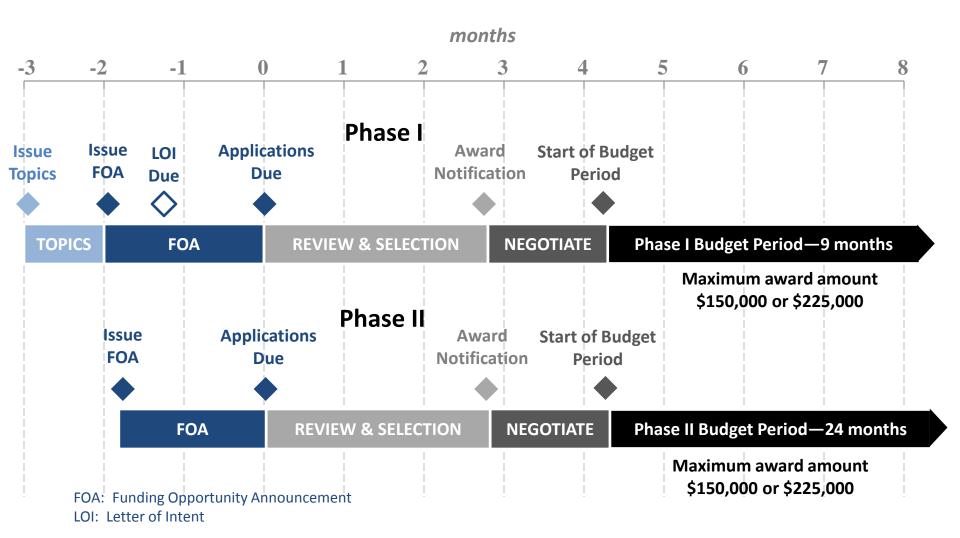
- Novel Radiation Monitoring Concepts
- In Situ Remediation
- Facility Deactivation and

Decommissioning

- Remote Sensing
- Global Nuclear Safeguards R&D
- Nuclear Detonation Detection

DOE SBIR & STTR Programs: Application & Award Process

Application & Award Timelines





Phase I Funding Opportunity Announcements Participating DOE Programs (FY15)

Phase I Release 1

- Office of Advanced Scientific Computing Research (ASCR)
- Office of Basic Energy Sciences (BES)
- Office of Biological and Environmental Research (BES)
- Office of Nuclear Physics (NP)

Phase I Release 2

- Office of Defense Nuclear Nonproliferation (NA)
- Office of Electricity Delivery and Energy Reliability (OE)
- Office of Energy Efficiency and Renewable Energy (EERE)
- Office of Fossil Energy (FE)
- Office of Fusion Energy Sciences (FES)
- Office of High Energy Physics (HEP)
- Office of Nuclear Energy (NE)



Schedule: FY15 Phase I, Releases 1&2

Phase I FOA Schedule	Release 1	Release 2
Topics Issued	July 14, 2014	October 27, 2014
Topic Webinars	Week of July 21, 2014	Week of November 3, 2014
Funding Opportunity Announcement Issued	August 11, 2014	November 24, 2014
FOA Webinar	August 15, 2014	December 2, 2014
Letters of Intent Due	September 2, 2014	December 15, 2014
Full Applications Due	October 14, 2014	February 3, 2015
Award Notification	early January 2015*	late April 2015*
Grant Start Date	mid-February 2015*	Early June 2015*

*preliminary dates subject to change



Schedule: FY15 Phase II, Releases 1&2

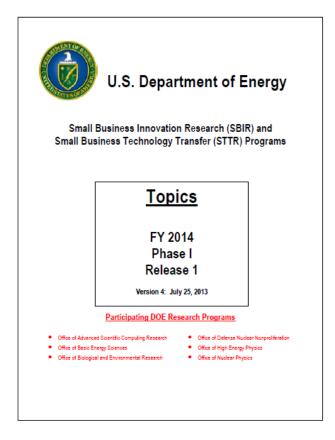
Phase I FOA Schedule	Release 1	Release 2
Funding Opportunity Announcement Issued	October 20, 2014	February 9, 2015
Letters of Intent Due (Supplemental Phase II only)	November 19, 2014	March 2, 2015
Full Applications Due	December 9, 2014	April 3, 2015
Award Notification	late February 2015*	Mid-June 2015*
Grant Start Date	early April 2015*	late July 2015*

*preliminary dates subject to change



Topics

- Topics Document
 - DOE primarily uses focused topics
 - Issued 4 weeks prior to the Funding Opportunity Announcement
- Communication with DOE program managers
 - Open communication permitted
- Topics Webinar
 - DOE program managers discuss their topics
 - Applicants submit questions in advance or during the webinar
 - Webinars are recorded and available from our website



Example Topic

- Topic & Subtopic
 - You must specify the topic and subtopic in your letter of intent and application
- Topic Header
 - List the maximum award amounts for Phase I & Phase II ant the types of application accepted
- Program Manager
 - Each subtopic lists the responsible DOE program manager
- Other Subtopic
- References

7. Instrumentation for Advanced Chemical Imaging

Maximum Phase I Award Amount: \$150,000		Maximum Phase II Award Amount: \$1,000,000	
	Accepting SBIR Phase I Applications: YES	Accepting SBIR Fast-Track Applications: YES	
	Accepting STTR Phase I Applications: YES	Accepting STTR Fast-Track Applications: YES	

The Department of Energy seeks to advance chemical imaging technologies that facilitate fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels. The Department is particularly interested in forefront advances in imaging techniques that combine molecular-scale spatial resolution and ultrafast temporal resolution to explore energy flow, molecular dynamics, breakage, or formation of chemical bonds, or conformational changes in nanoscale systems.

Grant applications are sought only in the following subtopics:

a. High Spatial Resolution Ultrafast Spectroscopy

Chemical information associated with molecular-scale processes is often available from optical spectroscopies involving interactions with electromagnetic radiation ranging from the infrared spectrum to x-rays. Ultrafast laser technologies can provide temporally resolved chemical information via optical spectroscopy or laser-assisted mass sampling techniques. These approaches provide time resolution ranging from the breakage or formation of chemical bonds to conformational changes in nanoscale systems but generally lack the simultaneous spatial resolution required to analyze individual molecules. Grant applications are sought that make significant advancements in spatial resolution towards the molecular scale for ultrafast spectroscopic imaging instrumentation available to the research scientist. The nature of the advancement may span a range of approaches including sub-diffraction limit illumination or detection, selective sampling, and coherent or holographic signal analysis.

Questions – contract Larry Rahn, larry.rahn@science.doe.gov

b. Time-Resolved Chemical Information From Hybrid Probe Microscopy's

Probe microscopy instruments (including AFM and STM) have been developed that offer spatial resolution of molecules and even chemical bonds. While probe-based measurements alone do not typically offer the desired chemical information on molecular timescales, methods that take advantage of electromagnetic interactions or sampling with probe tips have been demonstrated. Grant applications are sought that would make available to scientists new hybrid probe instrumentation with significant advancements in chemical and temporal resolution towards that required for molecular scale chemical interactions. The nature of the advancement may span a range of approaches and probe techniques, from tip-enhanced or plasmonic enhancement of electromagnetic spectroscopy's to probeinduced sample interactions that localize spectroscopic methods to the molecular scale.

Questions - contract Larry Rahn, larry.rahn@science.doe.gov

c. Other

In addition to the specific subtopics listed above, the Department invites grant applications in other areas that fall within the scope of the topic description above.

References:

- Basic research for chemical imaging. BES Chemical Imaging Research Solicitation. (FY 2006). Available at http://science.doe.gov/grants/pdf/DE-FG01-05ER05-30.pdf
- Visualizing Chemistry, The progress and Promise of Advanced Chemical Imaging, National Academies Press. 2006. Available at http://science.doe.gov/grants/pdf/DE-FG01-05ER05-30.pdf)



Technology Transfer Opportunities (TTOs)

- New feature of the DOE SBIR/STTR Programs beginning in FY 2013
- An opportunity to transfer inventions made by a DOE National Lab or university to your small business
- Awardees receive
 - an SBIR/STTR grant and
 - an option to license the technology
- Please review pages 1-2 of the topic document if you plan to submit an application to a TTO.



Example Technology Transfer Opportunity Topic

- Technology Transfer Opportunity
 - The topic or subtopic will be clearly labeled
- Research Organization
 - The DOE National Lab or university responsible for the TTO is listed along with contact information and other references
 - Please contact the Lab or university to obtain information about the TTO
- DOE Program Manager

10. TECHNOLOGY TRANSFER OPPORTUNITIES: BASIC ENERGY SCIENCES

Maximum Phase I Award Amount: \$225,000	Maximum Phase II Award Amount: \$1,500,000
Accepting SBIR Phase I Applications: YES	Accepting SBIR Fast-Track Applications: YES
Accepting STTR Phase I Applications: YES	Accepting STTR Fast-Track Applications: YES

Applicants to Technology Transfer Opportunities should review the section describing Technology Transfer Opportunities on page 1 of this document prior to submitting applications.

Grant applications are sought only in the following sub-topics:

a. Improved Ambient Ionization Source for Mass Spectrometry

An improved method and apparatus for surface ionization of samples for analysis by mass spectrometry has been developed. Analytes are probed using a small droplet of solvent that is formed at the junction between two capillaries. A supply capillary maintains the droplet of solvent on the substrate; a collection capillary collects analyte desorbed from the surface and emits analyte ions as a focused spray to the inlet of a mass spectrometer for analysis. The device has been shown to provide superior sensitivity to other methods of surface ionization and is particularly useful for imaging applications of mass spectrometry. Experimental results using the patented technology have been widely published including in Analytical Chemistry 2010, 82, 7979–7986. A need exists for a commercial partner to develop a commercial version of the new instrument for use by the broader research community.

Pacific Northwest National Laboratory information:

TTO information: http://availabletechnologies.pnnl.gov/technology.asp?id=313

Patent Status: USPTO # 8,097,845

USPTO Link http://patft.uspto.gov/netacgi/nph-

Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetahtml%2FPTO%2Fsearch-

bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=8097845.PN.&OS=PN/8097845&RS=PN/8097845

TTO tracking number: IPID-16593

Contact: Bruce Harrer; (509) 375-6958; bruce.harrer@pnnl.gov or

Julia Laskin; (509) 371-6136; julia.laskin@pnnl.gov

Questions - contact Larry.Rahn@science.doe.gov



Funding Opportunity Announcement (FOA)

- FOA
 - Available at the <u>DOE SBIR website</u> or <u>Grants.gov</u> and includes information on
 - Anticipated number of awards and funding available
 - Eligibility
 - Application Requirements
 - Review Criteria
 - Award Administration
 - Open for approximately 9 weeks
- Communications with DOE program managers
 - Open communication permitted to clarify the scope of the topic and subtopic



FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT

Small Business Innovation Research (SBIR) Small Business Technology Transfer (STTR)

FY 2014 Phase I Release 1

Funding Opportunity Number: DE-FOA-0000969

Announcement Type: CFDA Number: 81.049

ISSUE DATE: August 12, 2013

LETTER OF INTENT DUE DATE: September 3, 2013, 5:00 PM EDT

PRE-APPLICATION DUE DATE: Not Required

APPLICATION DUE DATE: October 15, 2013, 11:59 PM EDT



Letters of Intent (LOI)

Requirement

 You must submit an LOI by the due date to be eligible to submit an application

Primary purpose

- begin reviewer assignment to reduce award cycle time
- due 3 weeks after FOA is issued

Secondary purpose

 provide notification to applicants who appear to non-responsive; you may submit a formal application if you receive this notification

Limits

 Small businesses may submit only 10 letters of intent (and 10 applications) per solicitation

Content:

- Title
- Topic and subtopic
- Abstract (<500 words)
 - Provide sufficient technical detail to enable reviewer assignment
 - Non-proprietary
- List of collaborators
- Small business information
 - Name, address
 - Business official and contact information
 - Principal investigator
- Phase I or Fast-Track



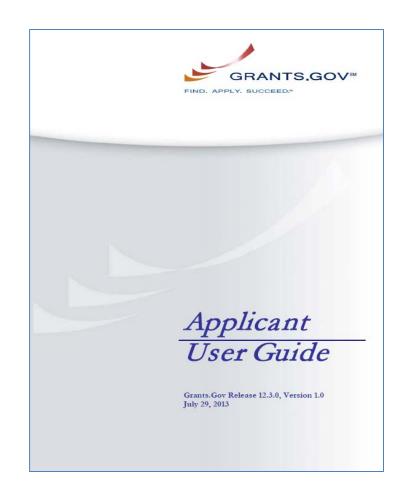
Letter of Intent (LOI) Submission

- Submit LOI online directly to the DOE Portfolio Analysis and Management System (PAMS) website: https://pamspublic.science.energy.gov/.
 - Select "Create New PAMS Account" (if you do not have an account)
 - Submit your LOI as a PDF file
 - Utilize the <u>LOI instructions</u> available at the DOE website to ensure that you submit all the required information
 - For additional details on the LOI submission process, see the Funding Opportunity Announcement



Application Process: Registration

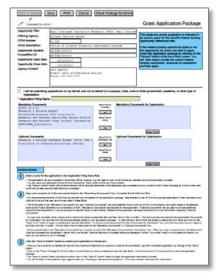
- Applications must be submitted through Grants.gov
- Registration at Grants.gov is a 3 step process
 - Obtain a DUNS number
 - 2. Complete a SAM registration.
 - Must be updated annually
 - 3. Complete Grants.gov registration
 - Start this process as early as possible!
- See the Grants.gov <u>Applicant User Guide</u> for more details on this process
- New Requirement: SBA company registry
 - Small businesses must register at the SBA company registry (http://www.sbir.gov/registration) and submit a copy of their registration with their grants.gov application

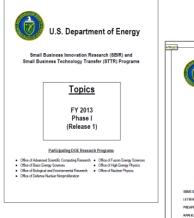


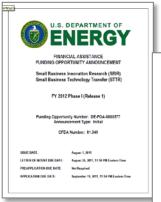


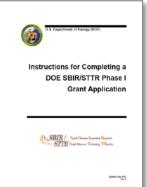
Completing an Application

- Download and complete the application package
 - Available at Grants.gov
 - Can be completed offline
- Important documents to assist you with completing the application package
 - Topics Document, Funding
 Opportunity Announcement, &
 Instructions are available at the
 DOE SBIR/STTR website











Important Elements of Your Application

- Project Narrative
 - Page and word limits
 - Phase I: 15 pages, 7,500 words
 - Phase II: 20 pages, 10,000 words
 - Fast-Track: 25 pages, 12,500 words
- Budget & Budget Justification
- Key Personnel
- Commercialization Plans
 - Phase I commercialization plan
 - An example can be found <u>here</u>
 - Phase II commercialization plan
- SBIR/STTR Information



SBIR vs. STTR

- DOE uses the same topics for SBIR & STTR
- Applicants can apply to either or both programs with a single application
 - If you apply to both programs, you must meet the requirements for both
- Level of Effort Requirement
 - SBIR
 - small business must perform >67% of the R&D in Phase I, >50% in Phase II
 - STTR requires collaboration with a research institution
 - small business must perform >40% of the R&D in Phases I & II
 - single research institution must perform >30% of the work in Phases I & II
- Principal Investigator
 - SBIR
 - principal investigator must be principally employed by the small business
 - STTR
 - principal investigator must be principally employed by the small business or research institution



Collaborations with Research Institutions

STTR

- Prior to receiving an award, there must be an agreement between the small business and the research institution that covers property and commercialization rights.
- To simply the negotiation of this agreement, we provide a <u>model</u> <u>agreement</u> for your use.

SBIR

 No restrictions on subcontracting to a research institution (Previous waiver requirement for Federal Labs has been eliminated.)



Phase I vs. Fast-Track Applications

- Applicants may submit either a Phase I or Fast-Track application to our Phase I Funding Opportunity Announcements
- What is a Fast-Track application?
 - Combined Phase I/Phase II application
 - Budget period: 33 months
 - 9 months for Phase I
 - 24 months for Phase II
 - Technical Narrative
 - Covers the entire budget period
 - Commercialization Plan
 - Requires Phase II commercialization plan (Phase I commercialization plan not required)



Fast-Track Application

 Primary Benefit: Awardees of Fast-Track applications will not have a gap in their funding between Phase I and Phase II



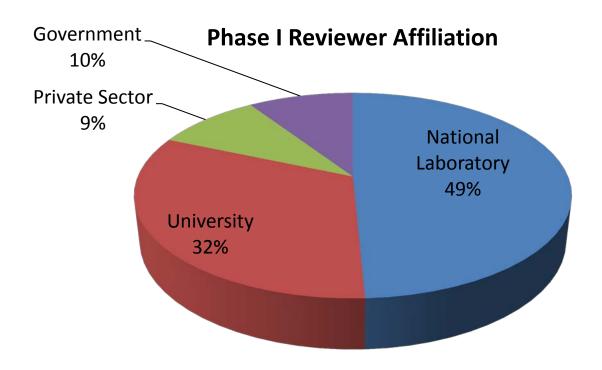
- Applicants must have a compelling Phase I/Phase II application.
 - May not be suitable for risky Phase I research with many different paths for Phase II
 - May not be suitable for those with limited commercialization experience

Review and Selection

- DOE primarily uses external peer review to evaluate your applications
 - Typically at least 3 technical reviewers
 - 1 reviewer for the Phase II commercialization plan
- Review Criteria (equally weighted)
 - Strength of the Scientific/Technical Approach
 - Ability to Carry Out the Project in a Cost Effective Manner
 - Impact
- You will be notified of the decision on your application within 90 days of the application deadline
 - Reviewer comments will be made available to you. Use this feedback constructively to improve future applications



Technical Reviewer Affiliation



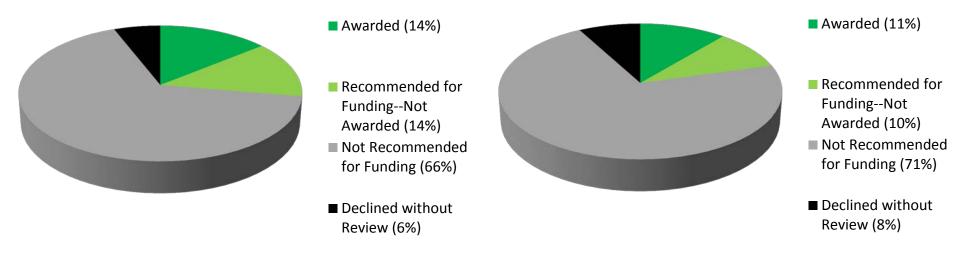
• Reviewers agree that (1) they will keep application information confidential and (2) they do not have a conflict of interest in reviewing the application.



Application Statistics for FY 2013

- Phase I
 - 2266 applications
 - 320 awards

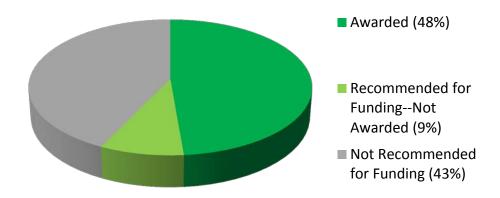
- Fast-Track
 - 63 applications
 - 7 awards





Application Statistics for FY 2013

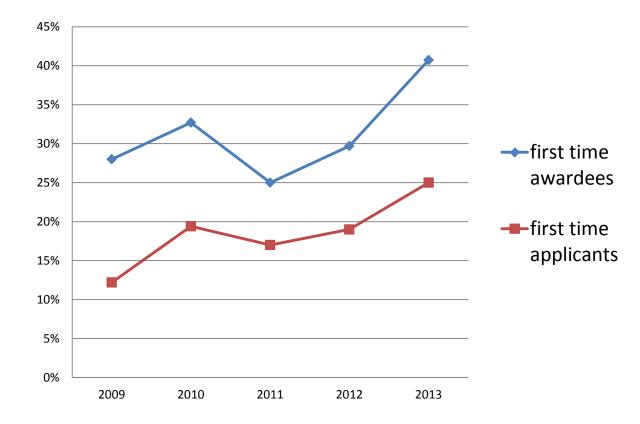
- Phase II
 - 223 applications
 - 108 awards





Phase I Awardees: First Time Winners & Applicants

% of Phase I Awardees





Award Negotiation

- Awardees will work with our the DOE Chicago Office to complete negotiation on their awards
- Grant start date is 6 weeks after the award notification
- Please respond to information requests in a timely fashion to ensure your funds are released by your grant start date
- Important Terms & Conditions
 - Intellectual property
 - Reporting Requirements



Commercialization Assistance

- DOE Commercialization Assistance will be provided by Dawnbreaker
 - Phase Lassistance
 - Commercialization Readiness Assessment
 - Focused assistance with development of Phase II commercialization plans
 - Phase II assistance
 - Flexible offerings to meet a variety of commercialization needs
 - http://science.energy.gov/sbir/commercialization-assistance/
- Company-selected commercialization assistance vendor
 - Reauthorization permits companies to select their own vendors to provide commercialization assistance
 - Company must include this vendor as a subcontractor or consultant in their Phase I or II application



Questions?

Contact information:

• DOE SBIR/STTR Operations: 301-903-5707

• DOE SBIR/STTR Email: sbir-sttr@science.doe.gov

Our Website:

• DOE SBIR/STTR Website: www.science.energy.gov/sbir

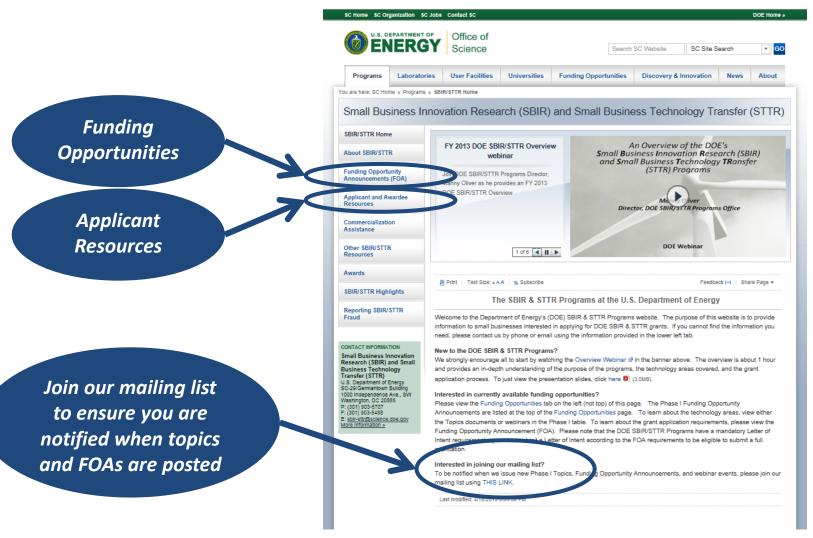
Join our Mailing List:

• DOE SBIR/STTR Mailing List: http://1.usa.gov/12SkziW

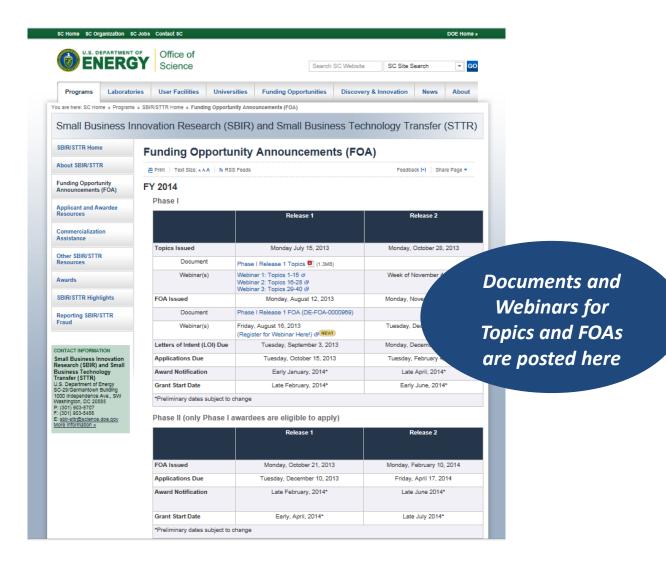


DOE SBIR webpage

http://science.energy.gov/sbir/

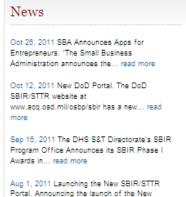


Funding Opportunities Tab



sbir.gov









solicitations

agencies

sbir.gov solicitation search

